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Títol de Treball Final de Grau: **MotivOut – a voice-based web-app to motivate smokers to quit smoking**

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Abstract

This work presents an informational web application aimed to encourage smokers to consider quitting smoking. This website incorporates two avatars, a man and a woman. The user interacts with one of them by issuing voice commands. The design of the web-app was informed by a user study conducted with ex-smokers. The aim of the study was to understand the contents of the web, the language in which the avatars should speak and the way in which these avatars should be designed. Once the development of the application was finished, a series of tests with users was carried out, to evaluate the impact of the web-app on their views about quitting smoking. This study allowed us to validate the impact of the avatar on the user's decision to consider quitting smoking.

Keywords— web application, speech api, avatar, smoking

1 Introduction

Currently voice assistants such as Siri or Alexa are increasingly used to interact with a range of applications. Voice assistants have generated a lot of expectation[4]. Voice-based interaction is a reality on the web, wherein end-users can communicate with an avatar by using their voice. Voice-based interaction is poised to be much more human, and natural than the widespread WIMP interaction paradigm.

The aim of this work is to create a web-app, intended to encourage smokers to consider quitting smoking. The user's interaction with the web will be through an avatar , which will read out the contents of the web using the Google Web Speech API. The website is designed as a route, with a beginning and an end, and depending on what the user says, this route will be shorter or longer. Both at the beginning and at the end of the interaction, the user will be asked to fill in a short survey, which will help us to ascertain the impact of the web-app on the users' decision about considering quitting smoking.

We consider that voice interaction on considering quitting smoking[10], since the interaction style is very natural for humans, so the objective of this work is to demonstrate or reject this idea. Working towards this end, a previous study was carried out to explore how the interaction with the avatar should be and how it should be shown towards the user to generate the greatest possible influence, type of language, appearance, age, etc.

The research methodology has consisted mainly of four parts.

The first part consisted of looking for information on the subject, making an analysis of the technologies to be used and an analysis of the requirements of the web.

Subsequently, a study was carried out to know how the web should be, what it should incorporate and why, how the avatar should be 'displayed', what information should provide, etc. Subsequently, the website was developed by using technologies X, and taking into account users' needs.

Once the website was developed, we conducted a number of tests to explore the impact of the web app and the avatar on considering quitting smoking

The fourth and last phase of the work consisted therefore in the analysis of all the data that it has been believed necessary to keep. 35% of those users who participants in the test, changed phase, from pre-contemplation to contemplation, and 15% passed from contemplation to preparation.

2 Motivation and context

One of the main motivations for choosing the topic has been to explore technologies such as voice interaction. This is very interesting to me because these types of technologies are currently on the rise, and it is important to know if they are really useful or simply fashionable. The combination of web technologies with user experience (UX) is also very important, since if an interface is not designed with and for the user, it is likely to be less pleasant, as well as difficult to use and unintuitive. This work also has an important social and practical value, since it can contribute to make smokers more aware of the risks of smoking.

This work also has an important social value, since it can contribute to an interesting social improvement. This work can contribute to make smokers more aware of the risks of smoking

Also, has practical value when it comes to different awareness techniques. To the best of our knowledge, there are no websites that assist smokers with voice interaction, so interaction with these systems is not as natural as it could be. And as some studies show, voice interaction can be much more comfortable and natural for both the older people and people with disabilities and illiteracy.

3 Objectives

The main objectives in this project are to:

- Design, develop and implement a web-app to encourage smokers to move from the pre-contemplation phase to the contemplation phase, or from the contemplation phase to the preparation phase. [11].
- Design an online voice-based avatar.
- Test the effect of different avatars, on users' decision of considering quitting smoking.

4 Development Schedule

The initial planning for the project is detailed in figure 1. And the final planning, in figure 2.

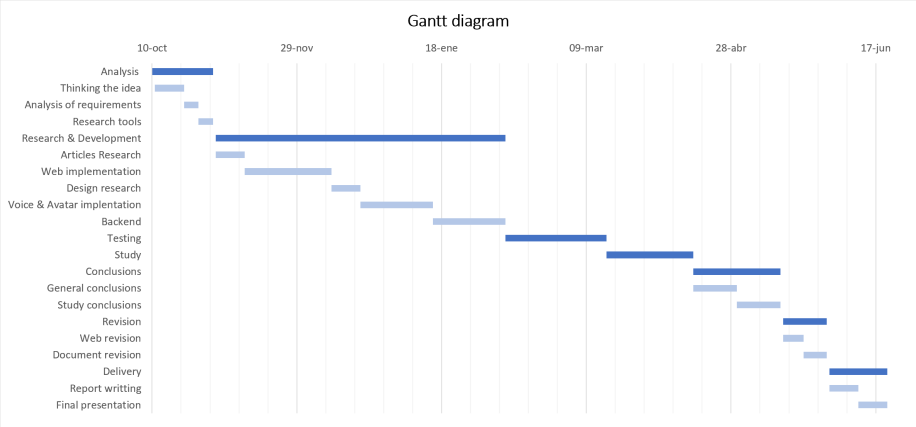

Figure 1: Planned Schedule

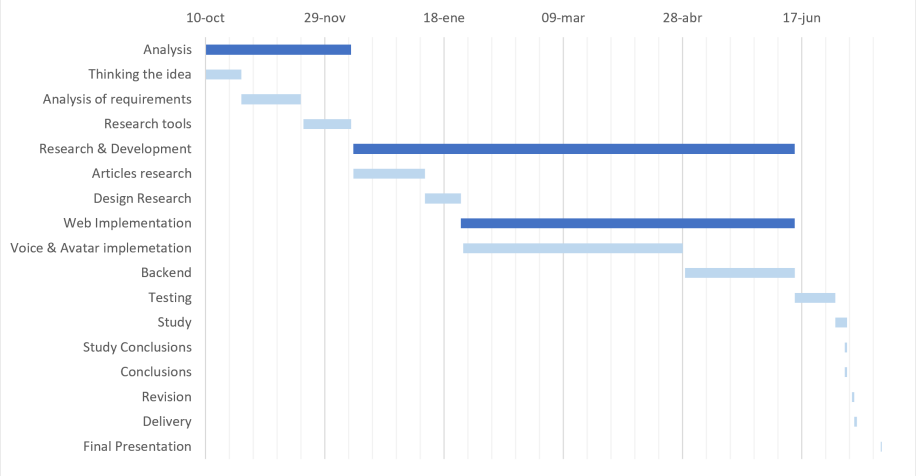

Figure 2: Final work schedule

The calendars are very different, since finally, the work took much longer than expected, This is due to my laziness, and because I thought I could do it all the last day.g in a hurry, and without the quality that I expected at the beginning.

5 Technologies

We comment on key aspects of the technologies used throughout this project next:

- **Web page:** A web page is an electronic document capable of containing text, sound, video, programs, links, images, hyperlinks and many other things, adapted for the so-called World Wide Web (WWW) and that can be accessed through a web browser.

- **Web Server:** A web server or HTTP server is a computer program that processes a server-side application, making bi-directional or unidirectional and synchronous or asynchronous connections with the client and generating or yielding a response in any language or client-side application.
- **User Interface:** The user interface (UI) is the point of human-computer interaction and communication on a device. This can include display screens, keyboards, a mouse, and the appearance of a desktop.[8].
- **Browser:** A web browser is a software, application or program that allows access to the Web, interpreting information from different types of files and websites so that they can be viewed.
- **Voice interface:** It is a speech recognition technology. With it, users can interact with a device using voice as a medium. A 'VUI' accepts user input via voice, processes it, and then provides voice-based output, which can be accompanied by text, graphics, or video on the screen.
- **Avatar:** In the Internet and other modern communication technologies, an avatar is called a graphic representation that is associated with a particular user for identification in a video game, Internet forum, etc.
- **Overleaf:**Overleaf is a collaborative, cloud-based LaTeX editor used for writing, editing, and publishing scientific papers. Partners with a wide range of scientific publishers to provide official LaTeX templates for journals and drop-shipping links. Overleaf was used to write this report.
- **Bootstrap:**Bootstrap[1] is a cross-platform library or open source toolkit for website and web application design. It contains design templates with typography, forms, buttons, boxes, navigation menus and other design elements based on HTML and CSS, as well as additional extensions to JavaScript. Bootstrap was used to reduce the amount of CSS.
- **Grails:**Grails is an open source web application framework that uses the Apache Groovy programming language (which itself is based on the Java platform). It is intended to be a high-productivity framework following the "code-by-convention" paradigm, providing an independent development environment and hiding much of the configuration details from the developer. It is used for its ease of learning once you are familiar with an IDE like IntelliJ as is my case.[3].
- **MongoDB:**MongoDB[5] is a general-purpose, document-based, distributed database designed for modern application developers and for the cloud age.
- **IntelliJ:**IntelliJ IDEA is an integrated development environment (IDE) for developing computer programs. I use it because I am already familiar with it and for compatibility with Grails.
- **HTML5:**HTML5 (Hyper Text Markup Language) is the fifth revision of the basic language of the World Wide Web, it is a markup language used to structure and present content for the web.
- **JavaScript:**JavaScript is a programming or scripting language that allows to implement complex functions in web pages, every time a web page does more than display static information for you to see, it displays timely content updates, interactive maps , 2D / 3D Graphics animation, video player scrolling, etc., you can bet that JavaScript is probably involved.

- **CSS3:**CSS (Cascading Style Sheets), is a graphic design language to define and create the presentation of a structured document written in a markup language.2 It is widely used to establish the visual design of web documents, and written user interfaces in HTML or XHTML.
- **Groovy:**Groovy is a dynamic object-oriented language, optionally typed, with the possibility of static typing and compilation for the JVM. It aims to multiply the productivity of developers thanks to a concise, familiar and easy to learn syntax. It integrates seamlessly with any Java program and immediately provides an application with powerful features.
- **Web Speech API:**The Web Speech API enables you to incorporate voice data into web apps. The Web Speech API has two parts: SpeechSynthesis (Text-to-Speech), and SpeechRecognition (Asynchronous Speech Recognition.)[9].

6 User study

In order to make a website with the intention of achieving maximum impact on the user, it is very important to know what the user wants and needs. As one of the objectives is to encourage smokers to move from the pre-contemplation phase to the contemplation phase, or from the contemplation phase to the preparation phase, I had to get in touch with smokers or ex-smokers, in order to gather ideas about what is what can help raise awareness of smoking.

To get in touch with ex-smokers who can give their opinion, we first contacted Francesc Abella, a psychologist specializing in smoking at Universitat de Lleida, who made my project known to her group of ex-smokers. When this group of people was informed of the project, Francesc sent them an online form[2] that I had prepared to collect the information.

The form consisted of two sections. One section was about the avatar, and questions addressed topics like appearance, age, gender, and behavior (ex., introverted).

The second section consisted of asking questions to find out what type of information and topics could help to educate users to achieve the objectives. By analyzing the results, I was able to observe that the topics that had to be discussed were the following: health, tobacco manufacturing, economic, social and emotional topics. This study also helped me to estimate that the duration of the interaction with the web: 10 to 15 minutes.

As a summary of the survey, we can highlight the following points:

- 38% of those surveyed believe that the avatar must be of the same sex as the user, while 33% believe that it is indifferent. The reminder the users think that it is not necessary to have an avatar.
- 72.2% of those surveyed believe that the avatar should have a 'normal' look, neither too formal nor too informal.
- 55.6% of respondents reported that it is important that the avatar represents being a former smoker.

- 100% of those surveyed pointed out that the avatar should not be introverted, but on the contrary. More than 50% believe that it is important to talk about all topics: economy, society, health, emotions and tobacco manufacturing.
- 38.9% of those surveyed believe that the interaction should last between 7 and 15 minutes.

With the results of the survey, a website was proposed with a route, that is, with a beginning and an end. The route allows the user to understand the impact of smoking on a number of areas , from money to health and well being. The user can choose whether to visit all the different areas or a selected number of them.

7 Analysis of requirements

The main goal of the system should be to help smokers prepare or consider quitting smoking. For this, the user will interact with the system by voice, choosing between different options. In order to achieve this goal, we conducted an analysis of requirements.

The purpose of the requirements specification is to define the requirements that the website must have and describe the functionality of the user throughout it.

7.1 User requirements

The user requirements are the following:

- The user can learn about smoking to become aware of the risks and try to quit smoking or at least consider it.
- The user must complete two surveys.
- The user can interact with the system by voice.
- The user must choose between several options to advance the screen.
- The user must have a microphone and speakers.

7.2 Software requirements

The software requirements are the following:

- The system must contain information about smoking
- The system must incorporate an avatar that will speak to interact with the voice with the user.
- When the user chooses an option, the system must update the page with the appropriate information.
- The system must have access to the microphone and speakers
- The system must have a maximum response time of 5 seconds.
- The system must be able to be used with one click to interact.
- The system must allow you to stop listening to the avatar.
- The system must be usable.
- The system must be compatible with the Chrome browser.

8 Development

8.1 Logic

To get started with the implementation, a Grails project was created. It was decided to make a single view with different div (divisions), which would be shown or hidden depending on what the user said.

At the beginning, when loading the page, only the division that has the main information is shown, where the user is explained how to interact with the web and how to choose the avatar. As depicted in figure 3, when loading the page, only a single div is shown in which the avatars are presented.

```
var opciones = document.getElementById( elementId: "opciones");
opciones.style.display = "block";

//Esxplicació avatar
var pissarra = document.getElementById( elementId: "pissarra");
pissarra.style.display = "none";

//presenta ambit econòmic
var economic = document.getElementById( elementId: "economic");
economic.style.display = "none";

//consells ambit econòmic
var economic_consells = document.getElementById( elementId: "economic_consells");
economic_consells.style.display = "none";
```

Figure 3: Show / hide div with JavaScript

Now, the problem lies in the interaction, since depending on what the user says, one div or another will be displayed. The first div is how to make it so that the user can speak, for that the Web Speech API[9] has been used, which, following the documentation, has been able to adapt to the project as much as possible.

```
var SpeechRecognition = SpeechRecognition || webkitSpeechRecognition
var SpeechGrammarList = SpeechGrammarList || webkitSpeechGrammarList
var SpeechRecognitionEvent = SpeechRecognitionEvent || webkitSpeechRecognitionEvent


var recognition = new SpeechRecognition();
var speechRecognitionList = new SpeechGrammarList();
speechRecognitionList.addFromString(grammar, weight: 1);
recognition.grammars = speechRecognitionList;
recognition.continuous = false;
recognition.lang = 'es';
recognition.interimResults = false;
recognition.maxAlternatives = 1;

var diagnostic = document.querySelector( selectors: '.output');
var bg = document.querySelector( selectors: '#outputResult');
var hints = document.querySelector( selectors: '.hints');

var btn = document.querySelectorAll( selectors: ".boton");
```

Figure 4: Part of API code

The code was adapted in such a what that when the user clicks on a button, the voice recognition begins, adding a listener to the button and calling the recognition function

And when updating the div, that is, hiding the current one and showing the next one (depending on the user's decision), the function in charge of speaking is called, and it reads out everything that is displayed on the screen.

```
function speak(inputTxtt) {
    inputTxt = inputTxtt;
    voices = synth.getVoices().sort( compareFn: function (a : SpeechSynthesisVoice , b : SpeechSynthesisVoice ) {
        const aname = a.name.toUpperCase(), bname = b.name.toUpperCase();
        if (aname < bname) return -1;
        else if (aname == bname) return 0;
        else return +1;
    });
    if (synth.speaking) {
        console.error('speechSynthesis.speaking');
        return;
    }
    if (inputTxt.value !== '') {
        var utterThis = new SpeechSynthesisUtterance(inputTxt);
        utterThis.onend = function (event : SpeechSynthesisEvent ) {
            console.log('SpeechSynthesisUtterance.onend');
        }
        utterThis.onerror = function (event : SpeechSynthesisErrorEvent ) {
            console.error('SpeechSynthesisUtterance.onerror');
        }


        //Veu
        utterThis.voice = voices[19];

        //To de veu
        utterThis.pitch = 1.7;

        //Velocitat
        utterThis.rate = 0.95;
        synth.speak(utterThis);
    }
```

Figure 5: Function Speak

To know how to update the screen, and with what information, first the information that the user says when clicking on the talk button is saved, and this information is saved to be able to compare it with a set of keywords. If one of the keywords is in the user's response, this keyword executes the piece of code in charge of updating the screen correctly and calling the speak function with the appropriate information.

At the same time, to make this comparison of keywords, a numerical variable has been saved, which refers to the 'moment' of the interaction in which the user is, so that if the variable is equal to 0, it means that the user is seeing the first div. As soon as it is updated, the value of the variable will increase by one and it will be worth 1, so there is no confusion and the same keywords can be used to go from the first div to the second as in the rest.

```
if(situacio_actual === 0) {
    // Juan o Marta??
    if(entrada_audio.includes(["Juan"])) {
        // Juan!
        avatar_triat = "Juan";
        $('#parrafo_intro').html("Hola, como ya sabes yo soy Juan y soy exfumador");

        //Arreglar això, i el de marta per a que es ostri el avatar corresponent
        $('.avatar_pissarra').attr("src", 'http://motivout.udl.cat/assets/avatares/home-


        opciones.style.display = "none";
        pissarra.style.display = "block";

        speak( inputTxtt: "Hola, como ya sabes yo soy Juan y soy exfumador, y mi propósito e
            "\n" +
            "Ahora te voy a estar mostrando alguna información que considero realmente ú
            "\n" +
            "Antes de empezar, tendrías que rellenar este pequeño formulario para hacer
            "Cuando lo tengas rellenado, solo tienes que pulsar el botón y decir: ¡VAMOS

        situacio_actual++;
    }
    else if(entrada_audio.includes(["Marta"])) {
        // Marta!
        avatar_triat = "Marta";
        $('#parrafo_intro').html("Hola, como ya sabes, soy Marta y soy exfumadora");
        $('.avatar_pissarra').attr("src", 'http://motivout.udl.cat/assets/avatares/dona-

        opciones.style.display = "none";
        pissarra.style.display = "block";
```

Figure 6: Variable situacio-actual = 0

As figure 6 shows, first you check how much the variable is worth, and depending on its value you enter an if or another. Once inside the if, what you do is look for the keywords inside the variable where the user's response is saved, and if the keyword is found, a piece of code is executed in charge of displaying or eliminating certain div , update the same div that shows and update the counter variable.

8.2 Avatar Design

Figure 7: Avatars

By drawing on the results of the survey, I believed that it was important for the user to feel identified with the avatar. Thus, it was decided to make two avatars, one male and another female.
As can be seen in Figure 7, the design of the avatars is simple, and the results of the two avatars are quite similar, since in general the intention is that they show a similar appearance, simply changing the sex. They are middle-aged, since in order to ensure that the maximum number of users feel identified with their age, it has been chosen to mark a median age that could range between 30 and 45 years. The avatars do not have either a formal o informal appearance.
They introduce themselves as ex-smokers in a sightly extroverted. These aspects were deemed important by those users who filled out the online form.

8.3 Web Design

Regarding the design, as already mentioned, we have divided a single page into many divs, so that all the time we work on the same page and show or hide the divs. These boxes contain the avatar, a couple of buttons, one to speak and another to stop listening to the avatar, and twice, a third button to fill in a questionnaire. All this is shown on one side, and on the other side, there is another box with the information and the text that the avatar reads.
As can be seen in figure number 8, the page has been arranged so that the header with the title of the web is at the top and at the bottom you can see the frame where the user will focus.
As briefly explained, this frame is divided into two parts, the left and the right. In the first one, you can see the avatar, along with all the buttons (back, talk, stop listening and form) here, is where the user will focus their attention, since their experience represents being a 'conversation' with the avatar. On the right-hand side, everything the avatar says is in text format, like a speech bubble.

It has been decided to do it this way, to organize all the contents and group them, and thus ensure that the user's attention is more focused on a specific area of the page.

Figure 8: Web page design

```
<div id="pissarra" class="card-body">
    <button class="boton_atras">Atrás</button>
    <div class="speech-bubble">
        <p class="parrafo">
            <span id="parrafo_intro"></span>, y mi propósito es ayudar a que te plantees dejar de fumar.<b
            Ahora te voy a estar mostrando alguna información que considero realmente útil, a mí me ayudó
            La verdad es que quiero que seas sincero/a conmigo, de modo que si no te interesa el tema del
            solo me lo tienes que decir y pasaremos al siguiente.<br><br>
            Antes de empezar, tendrías que rellenar este pequeño formulario para hacer un estudio de la in
            volver a rellenar el mismo formulario. <br>Cuando lo tengas rellenado, solo tienes que pulsar

        </p>
    </div>

    <img id="avatar_img" class="avatar_pissarra" alt="Avatar" src=''/>


    <div class="div_boton">
        <ul class="list_btns">
            <li class="btn-btn-ecuchando" id="btn-btn-ecuchando"><p class="p_escuchando" >Estoy escuchando
            <li class="btn-btn"><button class="boton" >Hablar</button></li>
            <li class="btn-btn"><button class="boton_parar" >Parar de escuchar</button></li>

            <li class="btn-btn"><button class="boton_formulario" id="boton_formulario" >Formulario</button
        </ul>
    </div>

    <div class="overlay" id="overlay">
```

Figure 9: Part of the structure of a div

Finally, what we have are 13 divs with the same design, with the simple difference of the contents and the text.

Each of these boxes are styled with CSS, although in general, Bootstrap is used, and most classes are given the same name to be able to use the same style for each and every one of the boxes.

8.4 Database and Server

To save all the necessary information to be able to carry out the study later, a NoSQL[6] database has been created with MongoDb[5], where the following information is stored: the information obtained from the surveys that are passed to the user, where we have, email, age and the results of whether to stop smoking or not, at the same time that the chosen avatar (man or woman) is also saved, the number of times that you press to stop listening to the avatar, the number of times the user skips a theme and the number of times the user presses the back button.

A server has also been created and the application has been deployed in it to be able to access the web through HTTP from any computer.

To install and later launch the website, the following steps were followed:

1 - a Linux virtual machine was created on a UdL server. The first thing that was done to this VM was to update the OS and from here it began to work.

2 - Install Tomcat on the server, and the service was started once this was done, the port was changed and then sdkman was installed. Once this was done, through FileZilla, the project's .war was uploaded to the server and that's it.

9 Pilot study

To analyze the results of the surveys and see if the users have changed phases, we relyed on the Prochascka method[7].
This method establishes that with two simple questions it is possible to evaluate what phase the person is at. Would you stop smoking in the next 6 months? If the answer is no, it means that the smoker is in the pre-contemplation phase. If the answer is yes, then it goes to the next question, would you stop smoking in the next month? If the answer were no, we would say that it is in the contemplation phase, but if the answer was yes to both questions, that person would be in the preparation phase, which is followed by the action phase.

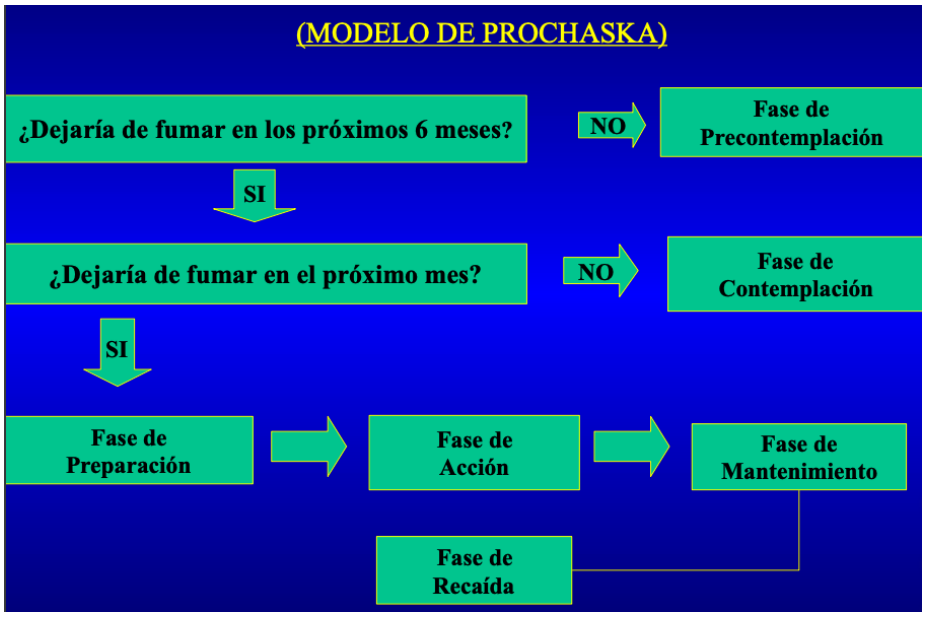

Figure 10: Prochaska model

We asked these two questions in the web-app, before and after interacting with the avatar.

We conducted the user study with 20 people, who were a mix of smokers and non-smokers. These tests were tested locally, all from the same computer, and without any help or explanation of anything. In addition to the phase of smoking, we also explored the following topics:

- Avatar identification - user according to gender
- Is there a phase change from pre-contemplation to contemplation or from contemplation to preparation?
- Is voice interaction really useful?

To analyze the first point, the identification of gender with the avatar, the relationship between the user's gender and the avatar that has been chosen must be analyzed.

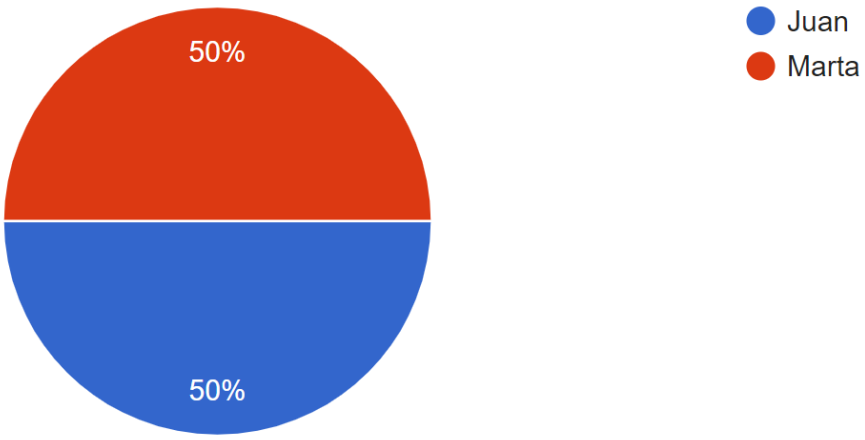

Figure 11: Chosen avatars

Figure 11 shows that, 50% of the users preferred to interact with Juan, and the other 50% with Marta.

Analyzing all the results individually, I have seen that the seven girls who interacted with the web, chose the female avatar, Marta, while 10 of the 13 boys, 76.9% of the men, chose the female avatar male, Juan. Taking into account that 100% of women have chosen the avatar of the same sex, and 76.9% of men also, it can be affirmed that users feel more identified with avatars of the same sex, which can help to achieve greater user attention and even greater impact on the user.

To analyze the next point, if there is a change in phase from pre-contemplation to contemplation or from contemplation to preparation, the responses to the two surveys of each user will have to be analyzed, obtaining a general and particular vision of each user.

Figure 12: Results of the first questionnaire

Figure 13: Results of the final questionnaire

As can be seen in the graphs, there is a notable improvement in the answers to the questions asked. In the question Would you quit smoking in the next 6 months ?, it can be seen that before the interaction with the web, 60% of the respondents said no, while, after the interaction, 75% of the respondents answered yes, they would quit smoking in 6 months.
Regarding the following question, Would you stop smoking in the next month ?, 90% of the respondents answered that they would not stop smoking before interacting with the web application, while, at the end of the interaction,the percentage was 75%
To analyze the last point, Is voice interaction useful? In the final survey, users are asked if they think that voice interaction has been useful, giving the option of a short answer, so that you can know first-hand the opinion of the users themselves.
As this answer was not mandatory, 19 of the 20 respondents responded, obtaining a total of 10 positive comments regarding voice interaction and 9 negative ones. One of these negative comments refers to the heaviness of the avatar talking all the time, understanding that the problem does not lie in the user having to speak, but rather in the avatar's speech. I do not know if it is the way of speaking, the type of voice, the speed or perhaps that the voice sounds a bit robotic, or by the fact that there is only a woman's voice still listening to the male avatar, but 47.3% of users agree that voice interaction has not turned out to be entirely useful.

10 Discussion

The three objectives of the work were the following: (1) to design, develop and evaluate a web application to encourage smokers to consider quitting smoking, (2) to design an avatar with which to interact by voice, (3) to test the effect of avatars on the decision of users to consider quitting smoking.
All these objectives have been achieved. We have designed an web-app with a voice-activated avatar that presents information about the negative effects of smoking. Regarding the third objective, it was achieved through tests with users and the subsequent study of the results obtained from the tests. In the analysis of results, it is possible to see the number of users who go from the pre-contemplation phase to contemplation and the not so remarkable number of users who go from contemplation to preparation. There are reasons to believe that the interaction with the web application, and in particular with the avatar, has a direct relationship in the change of the user's phase, thus testing the effect of the avatars on the user's decisions and achieving the third objective of the work.
The main limitations of this project are two.
The first of the limitations has been an error in the server, which did not allow users to activate the microphone. Due to a lack of time, it was decided not to invest time in this problem, but to invest it in the rest of the work. In order to carry out the tests with users even with the server problem, it was decided to do the tests locally. This greatly limited the number of users, since the web could not be accessed from any remote device.
The second of the problems was an error when passing all the data to the database, where it sent me a TIMEOUT error message. The same code fragment, the TFG tutor worked without problems and it updated the database, but for me, due to some network error, connection error or because the connections were blocked, it did not work for me. Due to a lack of time, it was decided to change the surveys, and instead of creating a dynamic form from the project itself, the buttons were linked with Google forms. This also prevented me from saving some variables such as the number of times the user stopped listening to the avatar, or the number of times a topic was skipped, thus limiting the subsequent study that was done. Even so, the study allows us to verify the influence of the avatar on the user to change the phase of the Prochaska method.
As lessons learned, I could say that now I understand why it is important not to leave all the work for last moment, since, due to both personal issues and laziness, I have been putting off work to do as much as I could and because of this I did not achieve the expected results.

11 Conclusions

In general, this work is a research project, since it has not simply consisted of developing a web-app and conducting tests with users. The work was intended to address a relevant issue: quitting smoking, and exploring the research question of whether a voice-activated avatar has (any) effect on considering quitting smoking. The results show that a number of people, reported changing their mind regarding smoking just after interacting with an avatar in a web-app. This change is in part fostered by the intervention (the web-app). Due to these favorable results, it can be affirmed that

the fact of integrating an avatar based on voice interaction in informative web pages or with the purpose of influencing users, is effective, since as the results of the study show, 35% of users have gone from the pre-contemplation phase to contemplation and 15% from contemplation to preparation.
In relation to the objectives, all three have been achieved, and all of them were designed to confirm the initial hypothesis of the work, which said that voice interaction achieved a great influence on the user.
The main contribution of this work is the fact of being able to claim that web pages based on voice interaction, can get a great attention from the user, thus influencing him. Even so, it is important to continue investigating the subject, since at the same time that technology advances, society also and it is important to be able to adapt as much as possible to the needs of users and to what they expect from this type of interaction. At the same time, user-avatar interactions should be adapted to human person-person interactions, in order to achieve greater naturalness in the user and much more fluency when speaking and interacting.
To finish, evaluating the result of the work and the entire process, some limitations can be observed, these areas to be improved are mainly the design of the web that is simple,choose the avatar you choose, the same voice always sounds (of a woman), so it loses a bit the appeal of being able to choose the avatar's gender.

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